

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

Page 1 of 1

PATENT NO. : 7,631,505 B2

APPLICATION NO.: 10/581,962

ISSUE DATE : December 15, 2009

INVENTOR(S) : Eric Seitz et al.

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title Page, item (73) should read as follows:

(73) Assignees: Sumitomo Heavy Industries, Ltd.,  
Tokyo (JP); Sumitomo (SHI)  
Cryogenics of America, Inc.,  
Allentown, PA (US)

### MAILING ADDRESS OF SENDER (Please do not use customer number below):

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor : Eric Seitz et al.  
U. S. Patent No. : 7,631,505 B2  
Serial No. : 10/581,962  
Issued : December 15, 2009  
For : WEARLESS VALVE FOR...

March 29, 2010

Certificate of Corrections Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REQUEST FOR A CERTIFICATE OF CORRECTION**

SIR:

We request a Certificate of Correction to correct the following error below:

**Assignees**, was incorrectly listed as “**Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)**” instead of “**Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)**” Please change the same to read: **Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)**

Attached, please find a copy of the front page of the Patent.

Any fee due as a result of this paper, may be charged to Deposit account No. 50-1290.

Respectfully submitted,

/ Pedro Carlos Fernandez /

Pedro Carlos Fernandez  
Reg. No. 41,741

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Docket No.: ISHI 21.053(334786-00027)



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(12) **United States Patent**  
**Seitz et al.**(10) **Patent No.:** **US 7,631,505 B2**  
(45) **Date of Patent:** **Dec. 15, 2009**(54) **WEARLESS VALVE FOR CRYOREFRIGERATOR**(75) **Inventors:** Eric Seitz, Macungie, PA (US); Jin Lin Gao, Allentown, PA (US); Ralph C. Longworth, Allentown, PA (US); Mingyao Xu, Emmaus, PA (US)(73) **Assignees:** Sumitomo Heavy Industries, Ltd., Tokyo (JP); Sumitomo (SHI) Cryogenics of America, Inc., Allentown, PA (US)(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 472 days.(21) **Appl. No.:** 10/581,962(22) **PCT Filed:** Mar. 8, 2005(86) **PCT No.:** PCT/US2005/007981§ 371 (c)(1),  
(2), (4) **Date:** Jun. 6, 2006(87) **PCT Pub. No.:** WO2005/088210**PCT Pub. Date:** Sep. 22, 2005(65) **Prior Publication Data**

US 2007/0107442 A1 May 17, 2007

**Related U.S. Application Data**(60) **Provisional application No. 60/551,154, filed on Mar. 8, 2004.**(51) **Int. Cl.**  
F25B 9/00 (2006.01)  
F16K 31/02 (2006.01)  
F16K 5/00 (2006.01)(52) **U.S. Cl.** 62/6; 251/129.11; 251/304(58) **Field of Classification Search** ..... 62/6;  
251/129.11, 304  
See application file for complete search history.(56) **References Cited****U.S. PATENT DOCUMENTS**

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\* cited by examiner

**Primary Examiner**—William C Doerfler(74) **Attorney, Agent, or Firm**—Katten Muchin Rosenman LLP(57) **ABSTRACT**

An improved method of reducing wear dust and torque required to turn a multi-port rotary disc valve utilizes a thrust bearing to hold the valve seat and/or valve disc such that they are not in contact with each other, or have light contact each other.

**5 Claims, 10 Drawing Sheets**→ Should read;  
Tokyo